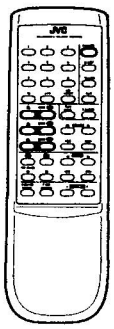
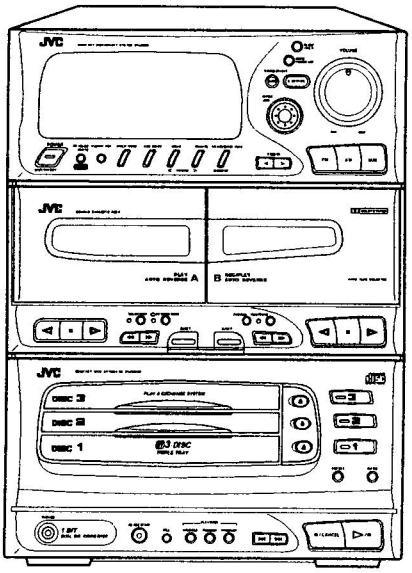
JVC

COMPACT COMPONENT SYSTEM

CA-C220

Pick up	OPTIMA-6
CD SIGNAL PROCESSEROR with in 1 bit DAC	TC9284BF
CD SERVO	TA8191F





COMPACT disc DIGITAL AUDIO

Area Suffix

A.....Austraria
BS.....the U.K.
C.....Canada
EF.....Continental Europe
EN..... Scandinavia
G.....Germany
GI.....Italy
J.....U.S.A.
UB.....Hong Kong
UP.....Korea
US.....Singapore
UT.....Taiwan
VX.....Eastern Europe
U.....Other Countries

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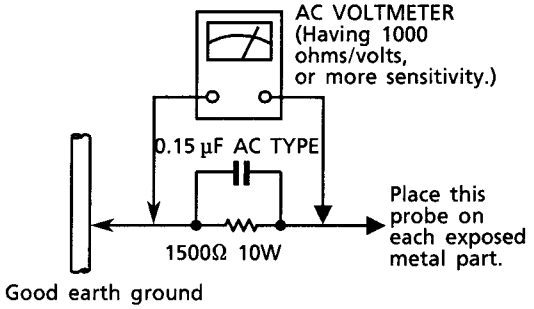
No.20522
Jun.1995

Safety Precautions

1. The design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Services should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacture of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the Parts List in the Service Manual. The use of a substitute repalcement which does not have the same safety characteristics as the recommended replacement parts shown in the Parts List of Service Manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.
5. Leakage currnet check (Electrical shock hazard testing)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, contorl shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
   Do not use a line isolation transformer during this check.
   - Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal parts of the cabinet , particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5mA AC (r.m.s.).
   - Alternate check method
     Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having, 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500Ω 10 W resistor paralleled by a 0.15 µF AC-type capacitor between an exposed metal part and a known good earth ground.
     Measure the AC voltage across the resistor with the AC voltmeter.
     Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and meausre the AC voltage across the resistor.
     Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75 V AC (r.m.s.). This corresponds to 0.5 mA AC (r.m.s.).



Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

Important for Laser Products

1. CLASS 1 LASER PRODUCT
2. DANGER : Invisible laser radiation when open and interlock failed or defeated. Avoid direct exposure to beam.
3. CAUTION : There are no serviceable parts inside the Laser Unit. Do not disassemble the Laser Unit. Replace the complete Laser Unit if it malfunctions.
4. CAUTION : The compact disc player uses invisible laser radiation and is equipped with safety switches which prevent emission of radiation when the drawer is open and the safety interlocks have failed or are defeated. It is dangerous to defeat the safety switches.
5. CAUTION : If safety switches malfunction, the laser is able to function.
6. CAUTION : Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

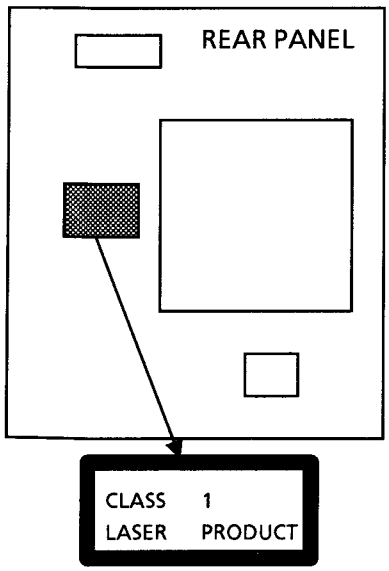
VARNING : Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.

VARO : Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.

ADVARSEL : Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

ADVARSEL : Usynlig laserstråling ved åpning, når sikkerhetsbryteren er avslott. unngå utsettelse for stråling.

REPRODUCTION AND POSITION OF LABELS



CLASSIFICATION LABEL
(Except for the U. S. A. and Canada)

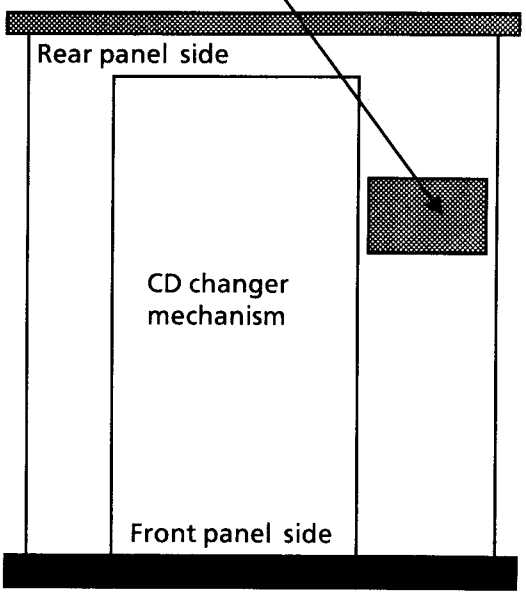
WARNING LABEL
(Except for the U. S. A.)

DANGER: invisible laser radiation when open and interlock failed or defeated. AVOID DIRECT EXPOSURE TO BEAM. (e)

VARNING: Osynling laserstråling när denna del å öppnad och spärren är urkoppled. Betrakta ej stålen. (s)

ADVARSEL: Usynling laserstråling ved åbning, når sikkerhedsafbrydere er ude at funktion. Undgåudsættelse for stråling. (d)

VARO: Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen. (f)



Thank you for purchasing the JVC Compact Component System.
We hope it will be a valued addition to your home, giving you years of enjoyment.
Be sure to read this instruction manual carefully before operating your new stereo system.
Here you will find all the information you need to set up and use the system.
For questions that are not be answered in the manual, please contact your dealer.

Features

Great sound

Here are some of the things that make your CA-C220 powerful and easy to use.

❑ To get such great sound from such a compact package the CA-C220 has:
- Pre-programmed live surround effects like **D. CLUB (Dance Club), HALL, STADIUM** as well as S.E.A. effects like **ROCK, POPS,** and **CLASSIC** so you don't have to be a sound engineer to get great effects.

Triple Tray

❑ CD changer function can operate 3 discs.
- Discs can be changed during play using the **TRIPLE TRAY.**
- Continuous, random or program play of 3 discs.

Easy operation

❑ The controls and operations have been redesigned to make them very easy to use so you can spend your time listening to music.
- With the One Touch Operation feature of JVC's **COMPU PLAY** you can turn on the CA-C220 and start the radio, the Cassette Deck, or the CD Player with a single touch.
- The three timers, **REC (Recording) Timer, DAILY Timer,** and **SLEEP Timer** are extremely easy to set.
- The Displays are large and clear. They are organized so you can tell at a glance what's happening because functions light up as you use them, and blink to tell you they are ready. They give you some important messages like "NO DISC", and some others.

How This Manual Is Organized

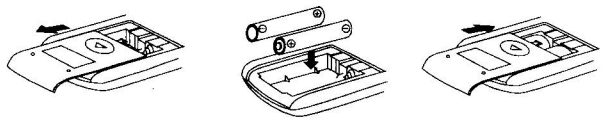
In this manual we have incorporated some special features:
- Basic information that is the same for many different functions is grouped in one place, and not repeated in each procedure. For instance, in the section on playing a CD, we do not repeat the information about setting the volume and the sound conditioning, which are talked about in the Using the Amplifier section.
- Name of buttons and controls are written in all capital letters like this: POWER.
- When we are talking about the Function, rather than the BUTTON or DISPLAY, only the first letter is capitalized.
- The column on the left of the page is a special place to make it easier to find just what you want to know about, with little headlines announcing what each part of the page is about. Sometimes illustrations and helpful hints are placed here also.

The manual has a table of contents to help you easily look up what you want to know.
We've enjoyed making this manual for you, and hope you will use it to enjoy the sound and many features built into your CA-C220.

How To Put Batteries In the Remote Control

Match the polarity (+ and –) on the batteries with the + and – markings in the battery compartment.

R6P (SUM-3)/AA (15F)



CAUTION: Handle batteries properly.
To avoid battery leakage or explosion:
- Remove batteries when the Remote Control will not be used for a long time.
- When you need to replace the batteries, replace both batteries at the same time with new ones.
- Don't use an old battery with a new one.
- Don't use different types of batteries together.

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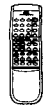
IMPORTANT CAUTIONS

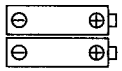
1. **Installation of the Unit**
   - Select a place which is level, dry and neither too hot nor too cold (Between 5°C and 35°C or 41°F - 95°F).
   - Leave sufficient distance between the Unit and a TV.
   - Do not use the Unit in a place subject to vibrations.
2. **Power cord**
   - Do not handle the power cord with wet hands!
   - A small amount of power (13 watts) is always consumed as long as the power cord is connected to the wall outlet.
   - When unplugging the Unit from the wall outlet, always pull the plug, not the power cord.
3. **Malfunctions, etc.**
   - There are no user serviceable parts inside. If anything goes wrong, unplug the power cord and consult your dealer.
   - Do not insert any metallic object into the Unit.

Getting Started

Check to be sure you have all of the following things, which are supplied with the CA-C220.

AM Loop Antenna


Remote Control


Batteries

FM Feeder Antenna

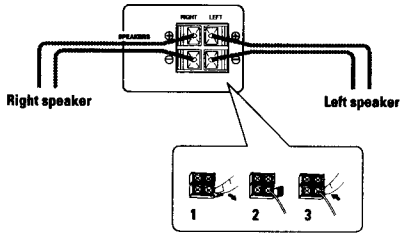
FM Antenna Adaptor

If any are missing, contact your dealer immediately.

Connecting the Speakers *(Please refer to instructions for speakers as well when you connect speakers.)*

For each speaker connect one end of the speaker wire to the speaker terminals on the back of the CA-C220 and one end to the speaker.

1. Open each terminal.
2. Insert the end of the speaker wire as shown (be sure to remove the insulation at the end of each wire first).
3. Close the terminals to clamp the speaker wires firmly in place.
4. Connect the red (+) and black (–) terminals of the right side speaker to the red (+) and black (–) terminals marked RIGHT on the CA-C220. Connect the red (+) and black (–) terminals of the left side speaker to the red (+) and black (–) terminals marked LEFT on the CA-C220.

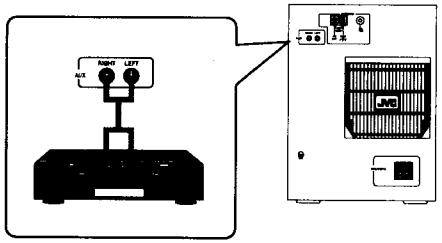


IMPORTANT: Use speakers with the correct impedance only. The correct impedance is indicated on the back panel.
CAUTION: If a TV is installed near speakers, the TV may display irregular colors. In this case, set the speakers away from the TV.

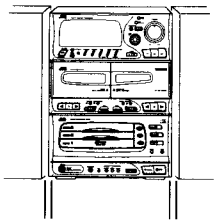
Connecting Auxiliary Equipment

CAUTION: Make all connections before plugging the Unit into an AC power outlet.

VCR or other equipment
To listen to these sources, press the AUX button.



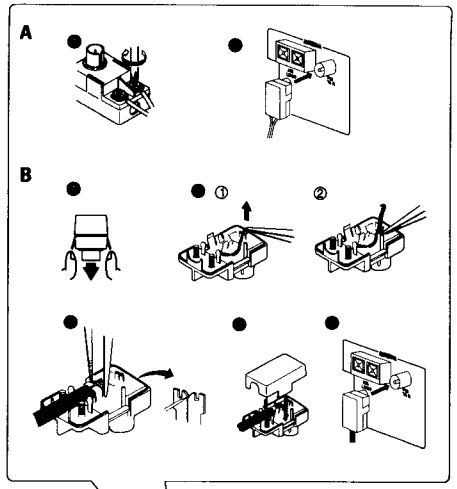
Laying Out the Unit



- Leave a space of at least 1 cm on both sides of the Unit and at least 10 cm at the back, for ventilation.

Connecting the FM And AM Antennas

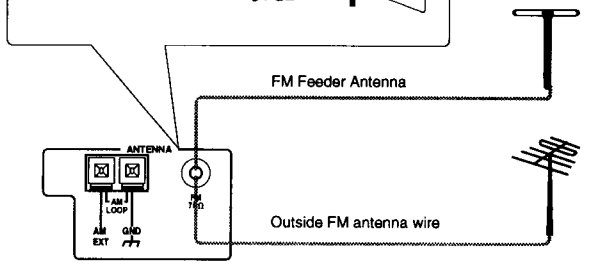
FM Antenna Connections



A. Using the Supplied Feeder Antenna
- Attach the Feeder Antenna to the FM connector as shown in the figure.
- Connect the FM connector to the FM 75-ohm COAXIAL terminal.

B. Using an FM 75-Ohm Antenna Cable (Not Supplied)
- Open the claws at both sides and remove the cover.
- Move the conductor wire from ① to ② using tweezers or a similar instrument (only when using coaxial cable).
- Fix the coaxial cable and its core.
- Put on the cover.
- Connect the FM connector on the FM 75-ohm COAXIAL terminal.

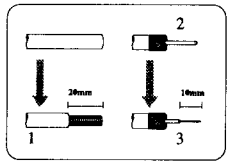
Note: Make sure the antenna conductors do not touch any other terminals, connecting cords or the power cord in the system as this could cause poor reception.



Unfold the loops of the supplied dipole FM Feeder Antenna and extend them as shown. Install them in the position and location which gives you the best FM reception.

If reception is poor, connect the outside antenna.

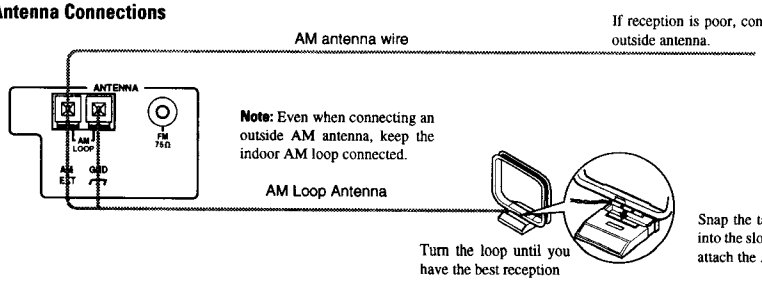
Before attaching a 75 ohm coaxial lead (the kind with a round wire going to an outside antenna), disconnect the supplied FM feeder antenna.



How To Strip the 75-Ohm Coaxial Cable
1. Remove about 20 mm from the outside cover of the 75 ohm coaxial cable, exposing the metal mesh.
2. Pull the mesh back over the cable as shown.
3. Strip the insulation about 10 mm back from the central wire.
4. Attach to the supplied Antenna Adaptor, as shown in the diagram above.

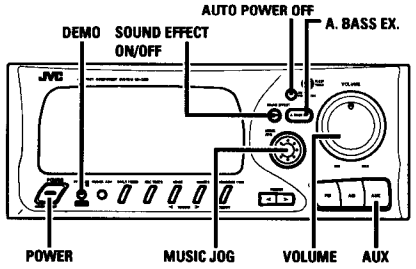
CAUTION: To avoid noise, keep antennas away from metallic parts of the CA-C220, connecting cord and the AC power cord.

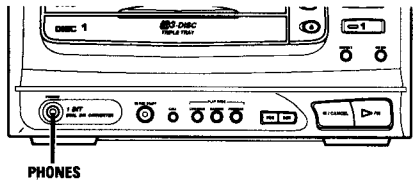
AM Antenna Connections


AM antenna wire
If reception is poor, connect the outside antenna.
ANTENNA
AM LOOP
FM 75Ω
AM EXT
GND
Note: Even when connecting an outside AM antenna, keep the indoor AM loop connected.
AM Loop Antenna
Turn the loop until you have the best reception
Snap the tabs on the loop into the slots of the base to attach the AM Loop.

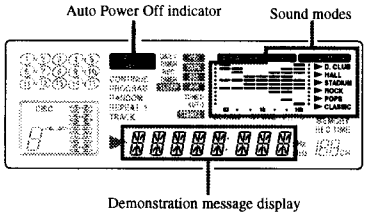
Now you can plug the AC power cord into the wall outlet, and your CA-C220 is at your command!

Using the Amplifier





Display



Standby indicator
Inside the POWER button is the red Standby indicator.
When the power cord is plugged in, the Standby indicator lights, indicating that the Unit is in standby condition.
When the POWER button is pressed to turn the Unit on, the Standby indicator goes out. It lights again when the POWER button is pressed to turn off the power.

The magic of COMPU PLAY

COMPU PLAY

COMPU PLAY is JVC's feature that lets you control the most used functions of the CA-C220 with a single touch. One Touch Operation starts playing a CD, turns on the Tuner, plays a tape, etc. with a single press of the play button for that function. What One Touch Operation does for you is to turn the power on, then start the function you have specified. If the Unit is not ready, such as when no CD or tape is in place, the Unit still powers on so you can put in a CD or tape. How One Touch Operation works in each case is explained in the section dealing with that function.

Demonstration Function

When the CA-C220 is connected to an AC power outlet, after "DEMO" flashes in the display, the Demonstration Display comes on repeatedly.
The Demonstration Display proceeds as follows until it is turned off, regardless of whether the power is on or off.

Power off → power on:	After the power has been turned on by pressing the POWER button, the Demonstration Display comes on automatically after about 1 minute.
During power on:	If no operation is done for about 1 minute, the Demonstration Display comes on. When doing the Sound Mode Demonstration, you can listen to the effects produced by each Sound Mode.
Power on → power off:	After the power has been turned off by pressing the POWER button (Standby Mode), the Demonstration Display will come on after about 1 minute.

To stop the Demonstration Display, press the DEMO button (FM MODE/MUTE button) when the Demonstration Display is on. This will work whether the power is on or off.
The Demonstration Display will remain off until you press the DEMO button (FM MODE/MUTE button) again.

To start the Demonstration Display again, press the DEMO button (FM MODE/MUTE button) when the Demonstration Display is off. This will work whether the power is on or off.

- The Demonstration Display will always come on when the Unit is plugged into an AC outlet. When plugging the Unit back in once it has been disconnected, if you don't want the Demonstration Display to come on, turn it off by pressing the DEMO button (FM MODE/MUTE button) when the display is on.

Turning the CA-C220 On

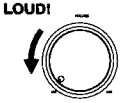
Press the POWER button.
The displays come on and the Standby indicator on the POWER button goes out.
- The CA-C220 comes on ready to do whatever it was doing when the power was last shut off. If the last thing you were doing was listening to a tape in Deck B, you are now ready to listen to a tape again in Deck B, or you can change to another source.
- If you were listening to the Tuner last, the Tuner comes on playing the station it was last set to.

Turning the CA-C220 Off

Press the POWER button again.
The Standby indicator on the POWER button lights up and the displays blank, except for the clock display.
- A little power (13 watts) is always consumed even though power is turned off (called Standby Mode).
- To switch off the Unit completely, unplug the AC power cord from the AC outlet. When you unplug the AC power cord, the clock will reset to AM 12:00 right away, and preset Tuner stations will be erased after a few days.

Adjusting the Volume Controls

CAUTION: Too LOUD!



Volume Control

Turn the VOLUME control to adjust the volume level of the speakers or headphones.

CAUTION: Always set the VOLUME control to MIN before turning on a connected source such as a VCR, or starting any of the other sound sources such as the Tuner, Cassette Deck or CD Player. Otherwise, the sudden blast of sound can permanently damage your hearing and/or ruin your speakers.

Active Bass Extension

This feature is designed and incorporated to reinforce the bass sound, depending on the volume level to maintain the richness and fullness of the bass. You cannot control it manually.
Press the A. BASS EX. button to light the indicator if you want to use the Active Bass Extension function.
To cancel this function, press the A. BASS EX. button again. The indicator will go off.

Listening With Headphones

A standard pair of headphones can be connected to the PHONES jack on the front panel. With the headphones connected, no sound will be heard from the speakers. Be sure to turn down the volume before connecting or putting on headphones, as high volume can damage both the headphones and your hearing.

Sound Effect Modes

The CA-C220 has some preset sound effects that give you control of the way your music sounds, so you can tailor it for your room and for the quality of the source. We can give you some idea of how each one affects the music, but the only way to really tell is to try them yourself.
You can use only one effect at a time, selecting from the Live Surround or S.E.A. effects. Feel free to experiment!

Live Surround Effects
D. CLUB (Dance Club)
HALL
STADIUM

S.E.A. Effects
ROCK
POPS
CLASSIC

Live Surround Effects

With these effects, the sound coming from only two speakers approaches the quality of sound from four speakers.

D. CLUB	Increases resonance and bass.
HALL	Adds depth and brilliance to the sound, like in a concert hall.
STADIUM	Adds clarity and spreads the sound, like in an outdoor stadium.

Preset S.E.A. (Sound Effect Amplifier) Effects

Adjustments of frequency range levels have been preset as three S.E.A. effects.

ROCK	Boosts low and high frequencies.
POPS	Good for vocal music.
CLASSIC	Set for wide and dynamic sound stereo systems.

To get an effect, turn the MUSIC JOG. The "SOUND MODE" indicator lights in the display, displaying the selected Sound Effect Mode and equalizing pattern.
If you select the Live surround effects, the "LIVE-S" indicator lights up on the display. If you select the S.E.A. effects, the "LIVE-S" indicator goes off.

To cancel the effect, press the SOUND EFFECT ON/OFF button; "SEA OFF" is displayed and "LIVE-S" and "SOUND MODE" or the "SOUND MODE" indicator goes off.

- While the "SOUND MODE" indicator is off, if you press the SOUND EFFECT ON/OFF button, Sound Effect is turned on. To select the mode, turn the MUSIC JOG.

SOUND MODE

When using the Remote Control, press the SOUND MODE button.
Each time you press the button, the Sound Mode changes as follows:

D. CLUB → HALL → STADIUM → ROCK → POPS → CLASSIC → *SOUND MODE OFF

* "SEA OFF" appears in the display to show that Sound Effect Mode has been turned off.

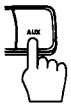
Listening To Optional Equipment

Advantages of connecting optional equipment

By playing the sound from auxiliary equipment through the CA-C220, you can gain control over how the music or program sounds. Once the connected equipment is playing through the CA-C220, you can apply the sound effects, make recordings, or listen with the headphones.

COMPU PLAY

❑ First make sure that the optional equipment is properly connected to the CA-C220.



1. **Set the VOLUME control to MIN.**
2. **Press the AUX button.**
   The Unit automatically turns on and "AUX" lights up on the display.
3. **Start playing the selected equipment.**
4. **Adjust the VOLUME control to the desired listening level.**
5. **Select a sound effect mode, if you wish.**

To Cancel the Setting
Change the source by starting any one of the CA-C220's built-in sound sources, such as the Tuner or CD Player.

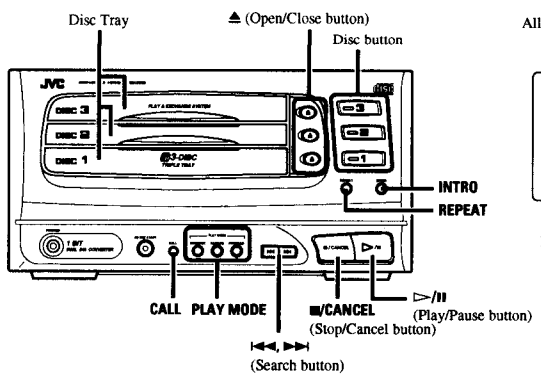
Auto Power Off

When playing either a tape or a CD, Auto Power Off will shut the Unit off when the tape or CD comes to an end. Although Auto Power Off is very useful for shutting off the CA-C220 at night, you can also use it if you think you might forget to turn the Unit off when leaving the house or your room at other times of the day.

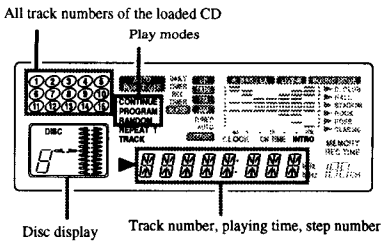
To Use Auto Power Off
Press the AUTO POWER OFF button so that the "AUTO POWER OFF" indicator lights up on the display.
To Cancel Auto Power Off
Press the AUTO POWER OFF button again so that the "AUTO POWER OFF" indicator disappears from the display.

Important Information On Using Auto Power Off
- ❑ The end of CD musical performance varies depending on the play mode of the CD Player. If the play mode is "CONTINUE" or "RANDOM", when all tracks on the disc set in the CD player end, the power is automatically turned off. If the play mode is "PROGRAM", the power is automatically turned off when the last track you programmed ends.
- ❑ Auto Power Off will still work even though you press the REPEAT button.
  Repeat Mode ("REPEAT" indicator lights up on the display):
  After all tracks on the disc set in the CD Player end, the power is automatically turned off.
  Repeat 1 Mode ("REPEAT 1" indicator lights up on the display):
  After the current track ends, the power is automatically turned off.
- ❑ If you press the AUTO POWER OFF button while the tape is playing:
  - If Reverse Mode is off (the REVERSE MODE indicator is not lighted), the Unit turns off when the current side finishes.
  - If Reverse Mode is on (the REVERSE MODE indicator is lighted), the Unit will turn off when the tape finishes playing in the ◁ direction.

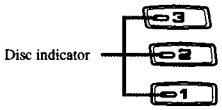
Using the CD Player



Display



Disc button



There is a disc indicator for each Disc button. This indicator goes out when you press the ▲ button to open the tray, and lights when the tray is closed.
While a disc is playing, the Disc indicator on its Disc button flashes. To confirm there is no disc in a CD player tray, its disc indicator is unlit.

COMPU PLAY
Compact disc play

The CA-C220's CD Player has an Automatic Changer with 3 disc trays. You can do Continuous, Random, Program or Repeat Play of the discs in the DISC 1, DISC 2 and DISC 3 trays. Repeat Play can be done of either all the tracks or only 1 track.
There is also the Intro Scan function, which continuously plays only the beginning of each of the tracks of the discs inserted in the trays, and the Tray Lock function, which safely keeps discs in the trays.

Here are the basic things you need to know to play a CD and locate the different selections on it. Each selection is called a track, so when we are talking about locating a track, we are also talking about how you find a certain song or performance.

The Quickest Way To Start a CD Is With the One Touch Operation
The power comes on, and operations are done automatically.
- ❑ Press a Disc button (1 to 3).
  - When the CD Player is not checking for trays with no disc, if there is a disc in the tray for the disc button you pushed, playback begins from the first track on that disc. If there is no disc in that tray, the next disc is automatically selected and playback begins from the first track of that disc.
  - When the CD Player is checking for trays with no disc, if there is a disc in the tray for the disc button you pushed, playback begins from the first track of that disc. If there is no disc in the tray, however, "NO DISC" appears in the display, then "OPEN" flashes in the display and the tray of the disc button pushed slides out automatically.
- ❑ Press the ▷/II button (or the ▶ button on the Remote Control) on the CD Player.
  - When the CD Player is not checking for trays with no disc, if there is a disc in the tray of the disc number displayed in the Disc display, playback begins from the first track of that disc. If there is no disc in that tray, the next disc is automatically selected, and playback begins from the first track of that disc.
  - When the CD Player is checking for trays with no disc, if there is a disc in the tray of the disc number shown in the Disc display, playback begins from the first track on that disc. If there is no disc in that tray, a tray containing a disc is automatically selected, and playback begins from the first track on that disc.
  - When the CD Player is checking for all the trays having no discs, "NO DISC" appears in the display, then "OPEN" flashes, and the tray of the disc number shown in the Disc display opens automatically.
- ❑ Press the ▲ button.
  - The power turns on, and the tray opens automatically.

Basics of Using the CD Player

You can play the discs continuously in the DISC 1 to DISC 3 trays.

To Insert Discs

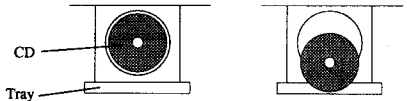
1. **Press the ≜ button on the right of the tray you want to insert the disc into.**
   The disc tray slides out automatically.
2. **Put a CD, with its label side up, into the tray.**
3. **Press the ≜ button to close the tray.**
4. **Repeat steps 1 to 3 to insert other discs into other trays.**
   - ❑ To continue putting discs into other trays, even if a tray is open, by pressing the ≜ button of another disc tray, the open tray will close automatically, and the new disc tray will slide out.

❑ To put an 8 cm CD into a tray, insert it so that it is aligned with the groove in the tray's center.

Note: When the tray displayed in the Disc display is opened, "OPEN" appears in the display.

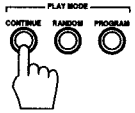
The same operation can be done by pressing the ≜ button on the Remote Control.

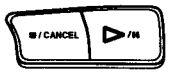
ATTENTION: *To avoid malfunctions when you play a CD, please set the CD in the right place at the center of the tray.*



To Play a Disc

The discs in the CD Player for which Disc indicators are lighted play continuously, beginning with the selected disc, and moving toward disc 3.





1. **Prepare the discs.**
2. **Check that "CONTINUE" appears in the display.**
   If "CONTINUE" does not appear, press the CONTINUE button.
   When using the Remote Control, press the PLAY MODE button repeatedly until "CONTINUE" appears in the display.
3. **Press the Disc button (1-3) of the disc to play.**
   The first track of the selected disc will begin playing.
   The Disc No. of the selected disc will appear in the display.
   When the selected disc finishes playing, the next disc will begin playing automatically.
   When the last disc has finished playing, the Unit will stop automatically.

❑ When a Disc button is pressed when a tray is open, the open tray will close automatically, and Continuous Play of the disc which was pressed begins.

To play discs continuously, beginning with the first track of the disc in the Disc display, you do not need to press a Disc button (1-3), just press the ▷/II button.

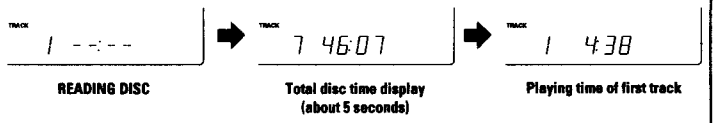
Note: When a Disc button is pressed where the Disc indicator is unlit, "NO DISC" appears in the display, "OPEN" lights, and the tray opens automatically.

The same operation can be done by pressing the DISC button or ► button on the Remote Control.

To stop the CD, press the ■/CANCEL button (or the ■ button on the Remote Control).
To pause, *press the ▷/II button while the CD is playing. The ► display is flash. To cancel pause (resume playing),* press the ▷/II button again. (Pause cannot be done with the ► button on the Remote Control.)

Display

- When the ≜ button of the tray shown in the Disc display is pressed to close the tray, the display changes as follows.



READING DISC | **Total disc time display (about 5 seconds)** | **Playing time of first track**

- When playback of a disc is stopped, the display changes as follows.

Total disc time display (about 5 seconds) | **Playing time of first track**

Note: When doing program operations, after the disc's display reads "Playing time of first track", change the Play mode to "PROGRAM". Before the display changes to "Playing time of first track", the Play mode cannot be changed to "PROGRAM".

To Change Discs While Playing

You can replace a CD in a tray not being used, while another CD is playing.

1. **Press the ≜ button of the tray not being used.**
   The tray opens.
2. **Replace the disc in the tray.**
3. **Press the ≜ button to close the tray.**

How to find a track

To Select a Disc, Track Or Passage Within a Track

Using the Unit

1. **If the disc with the track you want is not playing, enter the number of the disc you want using the Disc buttons (1 to 3).**
   - ❑ Example: for the third disc, press 3.
2. **When playback has started or when "Playing time of first track" has appeared in the display, choose the number of the track you want to listen to with the ⏮ and ⏭ buttons.**
   The selected track starts playing.
   - ❑ Each time you briefly press and release the ⏮ or ⏭ button, the track changes by one.
     Press and release the ⏭ button to go ahead one track at a time.
     Press and release the ⏮ button to go back one track at a time.
   - ❑ Holding down the ⏮ or ⏭ button will fast forward or fast reverse the CD so you can quickly find a particular passage in the selection you are listening to.

Using the Remote Control

1. **If the disc with the track you want is not playing, enter the number of the disc you want, using the DISC buttons (1 to 3).**
   - ❑ Example: for the third disc, press 3.
2. **Press the CD 10KEY button.**
3. **When playback has started or when "Playing time of first track" has appeared in the display, input the number of the track you want to listen to with the numeric keys.**
   The selected track starts playing.
   - ❑ Example: for track 5, press 5. For track 15, press +10 then 5. For track 20, press +10, then 10.
   - ❑ You can also use the ⏮ or ⏭ button to change tracks. However, you cannot fast forward or fast reverse to locate a particular passage using the Remote Control.

Searching the contents of CDs

Intro Scan

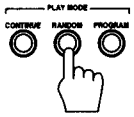
You can use the Intro Scan function to search for a desired track.

1. **Make sure that the CD is not playing and that "CONTINUE" appears on the display.**
   If not, stop the CD Player and press the CONTINUE button on the Unit.
   When using the Remote Control, press the PLAY MODE button until the display reads "CONTINUE".
2. **Press the INTRO button while the CD Player is stopped.**
   "INTRO" appears in the display.
3. **Press the Disc button (1-3) of the disc on which you want to begin Intro Scan.**
   When the ▷/II button is pressed instead of the Disc buttons (1-3), Intro Scan begins from the disc in the Disc display. Beginning with the first track on the selected disc, the first 15 seconds of each track is played continuously, one after another.
   The Unit stops automatically after the first 15 seconds of the last track on the last disc has been played.
4. **Press the I◄◄ button (or the I◄◄ button on the Remote Control) when the desired track is reached.**
   Intro Scan is canceled and normal playback starts from the selected track.
   - ❑ If you press the following buttons instead of the I◄◄ button (or the I◄◄ button on the Remote Control), Intro Scan is also canceled, and:
     - If you press the ►►I button (or the ►►I button on the Remote Control) : Continuous Play starts from the next track.
     - Disc buttons (1 to 3): Continuous Play starts from the first track of the selected disc.
     - To specify a track using the Remote Control, press the CD 10KEY button and then the numeric keys (1 to +10) to enter a desired track number: Continuous Play starts from the selected track.

To stop playing and to exit Intro Scan Mode, press the ■/CANCEL button (or the ■ button on the Remote Control).

Random Play

The tracks will play in no special order when you use this mode.



To Do Random Play of the Discs

1. **Press the RANDOM button on the CD Player.**
   "RANDOM" will appear in the display.
   When using the Remote Control, press the PLAY MODE button repeatedly until "RANDOM" appears in the display.
2. **Press the ▷/II button.**
   Random Play begins.
   When all of the tracks have been played, the CD Player stops.

To stop playing, press the ■/CANCEL button (or the ■ button on the Remote Control).

To exit Random Mode, press the CONTINUE button.
When using the Remote Control, press the PLAY MODE button repeatedly until "CONTINUE" appears in the display. (The CD Player must be in Stop Mode.)

❑ When Random Play finishes, press the CONTINUE button. You cannot select a disc while "RANDOM" is lighted in the display.

With programming, you can play back tracks in any order

Programming the Playing Order of the Tracks

You can change the order in which the discs and tracks play, and select only the discs and tracks you want from among those loaded in the CD Player.

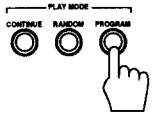
❑ You can do Program Play using either the Unit or the Remote Control, or a combination of both.
❑ You can program up to 20 steps in any desired order from among the discs in the player.

How to program

Programming Procedure
You can only make or change a program when the CD Player is stopped.

Programming Discs

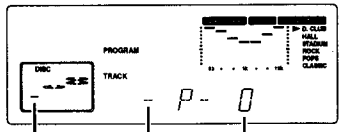
Check that "Playing time of first track" has appeared in the display before doing program operations. If "Playing time of first track" has not appeared, press the Disc button of a disc that has been inserted, then press the ■/CANCEL button and wait until "Playing time of first track" is displayed. (See page 10).



Using the Unit

1. **Press the PROGRAM button.**
   PROGRAM" lights in the display and the "Playing time of first track" display changes to the program input display.
2. **Select a disc with the disc buttons (1 to 3).**
   The input disc number appears in the display, and "- -" flashes in the track display area.
3. **While "- -" is flashing, press the I◄◄ and ►►I buttons to select individual tracks on the selected disc.**
   If "- -" changes from a flashing to a steadily lighted display, start over again by inputting a disc number.
4. **Press the PROGRAM button.**
   The step number changes from "0" to "1", and the track which will be played as the first track has been programmed.
5. **Repeat steps 2 - 4 until you have entered all the tracks you want to program.**
6. **Press the ▷/II button .**
   The Unit plays the tracks in the order you have programmed them.

Program input display



Disc number | Track number | Step number

Using the Remote Control

1. **Press the PLAY MODE button repeatedly until "PROGRAM" appears on the display.**
   The "Playing time of first track" display changes to the program input display.
2. **Select a disc with the numeric keys (1 to 3).**
3. **To select individual tracks from the selected disc enter each number by pressing the CD 10 KEY button and using the numeric keys (1 to 10 and +10).**
   - ❑ Example: for track 5, press 5. For track 15, press +10 and 5. For track 20, press +10 and 10.

❑ You can also use the I◄◄ or ►►I button to select tracks. If you use the I◄◄ or ►►I button to select tracks, press the PROGRAM button on the CD Player after selecting the desired tracks.

4. **Repeat steps 2- 3 until you have entered all the tracks you want to program.**
5. **Press the ► button .**
   The Unit plays the tracks in the order you have programmed them.

To stop playing, press the ■/CANCEL button (or the ■ button on the Remote Control) once.

To delete the program and exit Program Mode, press the ■/CANCEL button on the Unit (or the CANCEL button on the Remote Control) repeatedly until all the program steps are deleted, and then press the CONTINUE button.

❑ You can skip to a particular program step by pressing the I◄◄ or ►►I button (or the I◄◄ or ►►I button on the Remote Control) during program play.
❑ To play the programmed tracks over and over, press the REPEAT button on the Unit. "REPEAT" lights up on the display.

Note: When a ▲ button is pressed, the program contents for that button's disc are canceled. Pressing all the ▲ buttons cancels all program contents.

❑ When Program Play finishes, press the CONTINUE button. You cannot select a disc while "PROGRAM" is lighted in the display.

Programming hints

A Few Hints to Make Programming Easier

To Check the Program Contents (The Unit Must Be in Stop Mode)

- Each time you press the CALL button on the Unit, the program contents are shown on the display in the programmed order.

To Change the Program Contents

- Press the CALL button on the Unit until the display shows the program step to correct. While the step number display is flashing, enter the new disc number and/or track number, which will replace the one originally showing.
- To delete a program step, press the CALL button until the display shows the program step to delete, then press the ■/CANCEL button.
- You can use both of these ways to change program steps during programming as well as later.

How to repeat a selection or all the CDs

Repeating a Selection Or the Discs

You can have all the discs, the program or the individual selection currently playing repeat as many times as you like.

Press the REPEAT button on the CD Player.

Each time you press the REPEAT button , it cycles from function-off, which turns "REPEAT" off on the display, to "REPEAT" which will repeat all the tracks in order or according to the program you have set, and then to "REPEAT 1" which will repeat the currently playing track.

To exit Repeat Mode, press the REPEAT button so that neither "REPEAT" nor "REPEAT 1" appear on the display.

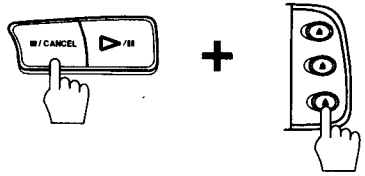
- Press the REPEAT button before or during Random Play to instruct the CA-C220 to continue with a different random track selection after the last selection of the last disc is played.

Tray Lock Function

In order to safely keep the discs in the CD Player, the three trays can be electronically locked in a single operation. When the electronic lock is on, the trays cannot be opened even if the ▲ button is pressed.

Locking the Electronic Lock

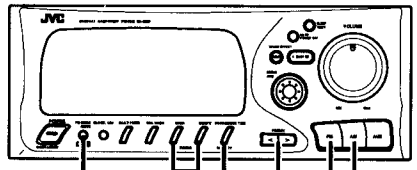
1. **Put the CA-C220's power into the STANDBY condition.**
   If the power is on, press the POWER button to light the Standby indicator.
2. **While pressing the CD Player's ■/CANCEL button, press the ▲ button for DISC 1's tray.**
   "LOCKED" flashes in the display a few times to notify that the trays have been locked.
   When the CD Player's trays have been locked, pressing the ▲ key for DISC 1 to DISC 3 will only result in "LOCKED" flashing a few times in the display, and the trays cannot be opened.



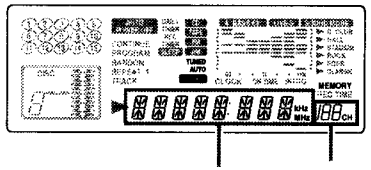
Unlocking the Electronic Lock

1. **Put the CA-C220's power into the STANDBY condition.**
   If the power is on, press the POWER button to light the Standby indicator.
2. **While pressing the CD Player's ■/CANCEL button, press the ▲ button for DISC 1's tray.**
   When the unlock operation is done, "UNLOCKED" appears in the display to show that the lock has been taken off. The trays can now be opened by pressing the ▲ buttons.

Using the Tuner



Display



Listening To the Radio

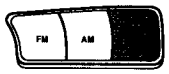
You can listen to both FM and AM stations. Stations can be tuned in manually, automatically, or from preset memory storage.

- Before listening to the radio:
  - Check that both the FM and AM antennas are firmly connected.

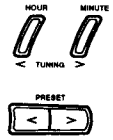
One Touch Radio

Just press the FM button to turn on the Unit and start playing the most recent FM station tuned in, or press the AM button to listen to the most recent AM station tuned in.

- You can switch from any other sound source to the radio by pressing either the FM or AM button.



Three ways to tune in a station



Tuning In a Station

Press the FM or AM button to turn on the radio. The display shows the station frequency tuned to.

Three ways to select a station

- Press the TUNING < or > button repeatedly to move from frequency to frequency until you find the one you want.

OR

- Hold down the TUNING < or > button, the frequency starts changing on the display. When a station is tuned in, "TUNED" lights up on the display and the frequency stops changing.

OR

- (Possible only after presetting stations.)
  Press once and release the PRESET < or > button to go to the next preset station, or hold the PRESET < or > button to cycle through the preset stations: release the button when the preset station you want shows on the display.

You can also use the Remote Control to tune in preset channels:

1. **Press the TUNER button so that you can receive the most recent station tuned in.**
2. **Select the station by entering the preset number in the numeric keys of the Remote Control.**

How to preset FM and AM radio stations

Presetting Stations

You can store up to 40 of your favorite radio stations (FM and AM) in memory, giving you quick, easy access to the stations.

1. **Select a band by pressing either the FM or AM button.**
2. **Press the TUNING < or > button to tune in a station.**
3. **Press the MEMORY button on the Tuner.**
   On the display, "MEMORY" will blink for 5 seconds.
   - During these 5 seconds while "MEMORY" is blinking, you can assign a channel number to the station and enter it into the memory.
4. **Select a channel number by pressing the PRESET < or > button until you find the channel number you want.**
5. **Press the MEMORY button and the station will be assigned to the channel number showing on the display.**
   - If a station has been previously stored using the same channel number, this will be erased and the newly selected station will be stored.
   - If "MEMORY" in the display goes off, start again from step 3.
6. **Repeat steps 1 - 5 for each station you want to store in memory with a preset number.**

CAUTION: If the Unit is unplugged or if a power failure occurs, the preset stations stored in memory may be lost.

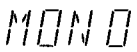
Receiving In Stereo Or Mono

The CA-C220 can receive FM broadcasts in either stereo or mono. When "AUTO" lights up on the display, the Unit automatically receives broadcasts in the mode they are transmitted. (When a stereo broadcast is received, "STEREO" lights up on the display.) Furthermore, you won't hear noise while tuning in stations. Usually, leaving the Unit in Auto Mode, with "AUTO" lighted, gives you the best reception.

While receiving an FM broadcast, the FM Mode can be switched between Auto and Mono with the FM MODE/MUTE button (DEMO button), as explained below.

Switching From FM Auto Mode To FM Mono Mode

When the Demonstration Display is On
Press the FM MODE/MUTE button (DEMO button) twice.
When the Demonstration Display is Off
Press the FM MODE/MUTE button (DEMO button) three times.

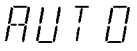


- "MONO" appears in the display.

Switching From FM Mono Mode To FM Auto Mode

When the Demonstration Display is On
Press the FM MODE/MUTE button (DEMO button) twice.
When the Demonstration Display is Off
Press the FM MODE/MUTE button (DEMO button) three times.

AUTO

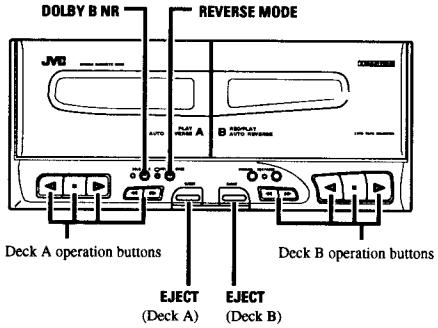


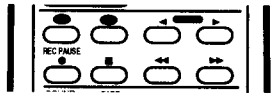
- "AUTO" appears in the display.

Note: The Demonstration Display will always turn off when the FM Mode is switched from Mono to Auto or vice versa.

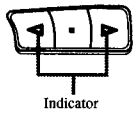
Using the Cassette Deck

Listening To a Tape





- When using the Remote Control to operate the Cassette Deck, press the A or B button to select which deck to operate.
  A : Operate deck A
  B : Operate deck B



There are indicators on the ◁ and ▷ button of Deck A and Deck B.
These indicators indicate the direction the tape advances.
These indicators flash slowly when playing or recording, and quickly when fast left and fast right.
When doing Music Scan, the indicators flash slowly and quickly repetitively.

Listening to a tape: how to use your Cassette Deck

The Cassette Deck allows you to play, record and dub audio tapes.
- Most tapes are now recorded with the Dolby NR system, so first check which type of the Dolby NR system has been used on the tape. Only Dolby B NR is incorporated into the CA-C220.
- With Automatic Tape Detection, you can listen to type I or II tapes without changing any settings.

CAUTION for when playing tapes:
The CA-C220's Cassette Deck prioritizes later operations over earlier ones. If a deck is operated while the other deck is already operating, the deck which was already operating will stop, and the other deck will start.

The use of tapes longer than 120 minutes is not recommended, since characteristic deterioration may occur and these tapes easily jams in the pinch-rollers and the capstans.

COMPU PLAY

One Touch Play

By pressing either the ▷ or ◁ button (or the ◄ or ► button on the Remote Control) on either Deck A or B, the Unit will come on, "TAPE" appears in the display, and if a tape is in the deck, it will start to play. If no tape is loaded, the Unit will come on and wait for you to insert a tape, or select another function.

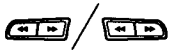
Playback procedure

Regular Play

When the power is already on, you can use this basic procedure:

1. **Press the EJECT button for the deck you want to use.**
2. **When the cassette carrier opens, put the cassette in, with the exposed part of the tape down, toward the base of the CA-C220.**
   - ❑ If the cassette carrier does not open, turn the Unit off, then back on and press the EJECT button again.
3. **Close the carrier gently.**
4. **Press the ▷ button to play the front side, or the ◁ button to play the reverse side. The arrow indicator on the pressed button flashes and the tape starts playing.**

To stop playing, press the ■ button.
To remove the tape, stop the tape, and press the EJECT button.



Fast Left And Fast Right

- ❑ While the tape is stopped, press the ◀◀ button and the tape will wind rapidly onto the left side of the cassette without playing.
- ❑ While the tape is stopped, press the ▶▶ button and the tape will wind rapidly onto the right side of the cassette without playing.

Finding the place you want: Music Scan

Music Scan

To find the beginning of a music track during play, use the Music Scan function. Music Scan searches for blank portions that usually separate tracks, then plays the next song.

Scanning backwards

To Find the Beginning of the Current Song

Press the ◀◀ or ▶▶ button during play.

- ❑ Make sure that you press the ◀◀ or ▶▶ button in the opposite direction to that in which the tape is playing. Searching stops at the beginning of the current song, and the current song starts automatically.

Scanning forwards

To Find the Beginning of the Next Song

Press the ◀◀ or ▶▶ button during play.

- ❑ Make sure that you press the ◀◀ or ▶▶ button in the same direction as that in which the tape is playing. Searching stops at the beginning of the next song, and the next song starts automatically.

Music Scan works by detecting a 4-second long blank at the beginning of each selection, so it won't work well if your tape has:

- No blank at the beginning of a track
- Noise (often caused by much use or poor quality dubbing) which fills the blank with noise.
- Long, very soft passages or pauses in a selection. The scan will detect these as 4-second long blanks. If this happens, just scan again until you reach the selection you want.

More useful things to know:

- **Reverse Mode**
- **Continuous Play**

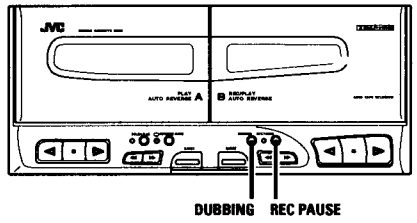
- **Dolby NR**

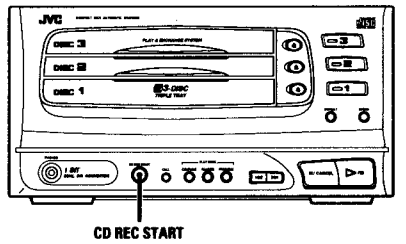
Other Useful Features of the Cassette Deck

- ❑ Use **Reverse Mode** to make the tape automatically reverse at the end of a side and start playing the other side. Press the REVERSE MODE button to change from Reverse Mode on (when the indicator is lighted) to Reverse Mode off, or from off to on.
- ❑ **Continuous Play:** With the Reverse Mode indicator on, when tape playback in the ◁ direction finishes, the Unit always checks to see if a tape is in the other deck. If there is, it automatically starts playing. This Continuous Play function works regardless of which deck starts first.
- ❑ Press the DOLBY B NR button to switch Dolby B Noise Reduction on (the indicator lights up) or off (the indicator goes off). If a tape is recorded with the Dolby B NR system, playing it back with the Dolby NR on will reduce tape noise and improve the clarity of the sound.

Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"DOLBY" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

Recording





What can you record?
- Tapes
- Radio
- CDs
- Connected source

Recording onto a cassette from any of the sound sources is simple. Just place a tape in Deck B, have the source ready, make one or two settings, and you're ready to record. For each source the procedure is a little different and now we'll explain just what to do for each one. If you forget, just come back to the section which has the specific procedures you need. But first, here are a few things to make your recordings better.
Note: Set the demonstration function to OFF before doing recording.
Press the DEMO button 1 time when doing Demonstration Display.
Press the DEMO button 2 times when not doing Demonstration Display.
Take care that if recording is done with the demonstration function left ON, the sound of the recording will change or break off to match changes in the "SOUND MODE".

Things To Know Before You Start Recording

Copyright

- ❑ **It may be unlawful to record or play back copyrighted material without the consent of the copyright owner.**

Reduce hiss — Dolby NR

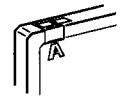
- ❑ Press the DOLBY B NR button — the indicator lights up — to reduce tape hiss, except when dubbing tapes, since Dolby NR is inactive in Dubbing Mode regardless of the setting of DOLBY B NR. The dubbed tape automatically contains the same processing as the source tape.

Recording level

- ❑ The recording level, which is the volume at which the new tape is being made, is automatically set correctly, so it is not affected by the VOLUME control on the CA-C220. Thus, during recording you can adjust the sound you are actually listening to without affecting the recording level.

Erasure protection

- ❑ Two small tabs on the back, one for side A and one for side B, can be removed to prevent accidental erasure or re-recording. To record on a cassette with the tabs removed, you must cover the holes with adhesive tape first. However, when a type II tape is used, only cover part of the hole as shown, since the other part of the hole is used to detect the tape type.



Recording sound mode

- ❑ When recording, you can use the Sound Effect Modes to condition the music as it is recorded. But when recording using CD Direct, once recording has started, these settings cannot be changed.

Usable tape type

- ❑ Type I and Type II tapes can be used for recording.

Note: At the start and end of cassette tapes, there is leader tape which cannot be recorded onto. Depending on the recording source, the first part of the recording may be missing because of the leader. When recording CDs or radio broadcasts, to get the beginning of the recording on the tape, first wind on the leader before beginning recording.

CAUTION: If recordings you have made have excessive noise or static, the Unit may be too close to a TV which was on during the recording. Either turn off the TV or increase the distance between the TV and the CA-C220.

Standard recording: any source to tape

Standard Recording

This is the basic method for recording any source. The CA-C220 also has special ways for recording CD to tape, and tape to tape, which save you time and effort, as well as give you some special effects.
However, when you need to add a selection to a tape you have made, or are combining selections from several sources on one tape, use the method described below; just substitute the source you want into this procedure, such as a tape in Deck A, a CD, or the Tuner. You can also record from an auxiliary source with this procedure.

Source to tape: step by step

To Record Any Sound Source To Tape

Follow these steps to record from any sound source onto a tape in Deck B.

1. **Insert a blank or erasable tape into Deck B.**
2. **Press the REC PAUSE button.**
   The REC PAUSE indicator lights up.
3. **Press the REVERSE MODE button if you want to record on both sides of the tape.**
   The REVERSE MODE indicator lights up.
4. **Prepare the source, by, for example, tuning in a radio station, loading CDs, or turning on connected equipment.**
5. **On Deck B, press either the ▷ button to record on the front side, or the ◁ button to record on the reverse side.**

To Pause At Any Time During the Recording Process
Press the REC PAUSE button again. Then press either the ▷ or ◁ button on Deck B to restart recording.
To Stop At Any Time During the Recording Process
Press the ■ button on Deck B.

CAUTION: When Sound Effect Mode or other buttons are operated during recording, note that the recorded sound or the sound of the recording source may change.
However, discs not being recorded can be changed, and AUTO POWER OFF or SLEEP timer settings can be made with no effect to the sound.

CD Direct Recording

Everything on the CD goes onto the tape in the order it is on the CD, or according to an order you have set in a program.

CD Direct Recording: step by step

1. **Prepare CDs. (See page 9.)**
   When recording from a disc in the holder, first select the disc by pressing the Disc button (1-3) of the disc to record from, then the ■/CANCEL button.
2. **Set the Sound Effect Mode if you want.**
3. **Insert a cassette in Deck B to record on.**
   - ❑ If you want to record on both sides of the tape, press the REVERSE MODE button on the Cassette Deck so that the REVERSE MODE indicator lights up.
4. **Press the CD REC START button on the CD Player.**
   The Unit plays the CD and starts recording.

   At the end of the tape, the CA-C220 automatically goes back to the beginning of the last selection and re-records it, this time gently fading out at the end. If you selected the Reverse Mode, the reverse side starts with the last selection on the front side and will be faded out at the end again. (A 10 second blank is created at the beginning of the reverse side.)
   When the tape is finished, the Unit stops the CD Player and the Cassette Deck.

To Stop At Any Time During the Recording Process
Press the ■ button on Deck B.

Notes:
- When the Auto Power Off function is turned on while recording a CD, the power will automatically turn OFF when either the CD or tape finishes. Be careful when the Auto Power Off function is turned on while recording a CD in Repeat Mode, as repeat will be canceled and the power will automatically turn OFF with Repeat Mode ("REPEAT" or "REPEAT 1"). (Page 7)
- When making SLEEP timer settings while doing CD Direct recording, set the time so that there is enough leeway to finish the recording before the power goes off. If the time is set to about the length of the CD, the power may go off before recording finishes.

For CD Direct Recording using more than one disc, use a blank tape. If you use a pre-recorded tape, pre-recorded sound may not be erased between newly-recorded tracks.

Tape to tape dubbing: introduction

Tape To Tape Recording (Dubbing)

Recording from one tape to another is called dubbing.
You can dub tapes simply, with just a single button.
- ❑ To dub both sides of a tape, start from side A for both Deck A and Deck B, and press the REVERSE MODE button so that the REVERSE MODE indicator lights up.
- ❑ It is preferable that the type of tape (Type I or Type II) you record from be the same as the type you record onto.

How To Use the DUBBING Button

1. **Insert the source cassette you want to copy from into Deck A for playback.**
2. **Insert the blank or erasable cassette you want to copy onto in to Deck B for recording.**
3. **Press the DUBBING button.**
   Deck A and Deck B will start simultaneously.

To stop dubbing, press the ■ button on Deck A or Deck B.

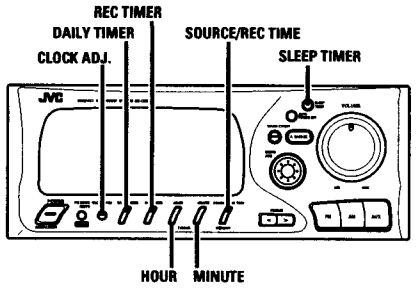
- ❑ Dolby NR is inactive in dubbing mode regardless of the setting of DOLBY B NR. The dubbed tape automatically contains the same processing as the source tape.
- ❑ When doing dubbing with the DUBBING button, you can hear Sound Effect Mode effects through the speakers or headphones. However, the sound is dubbed without Sound Effect Mode effects. To do dubbing with the sounds from the Sound Effect Mode, use the "Standard Recording" method given on page. 19.

Recording With the Timer

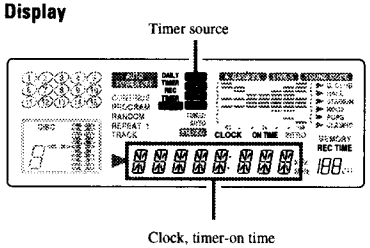
The Cassette Deck can be set to record a tape automatically. This is especially useful for recording broadcasts when you are not at home, or late at night when you are asleep.

1. **Insert a cassette for recording into Deck B.**
2. **Set the REC Timer, by following the steps in "Setting the REC (Recording) Timer" (Page 21).**

Using the Timers



Display



Three Timers:
- **REC Timer**
- **DAILY Timer**
- **SLEEP Timer**

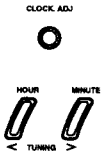
The timers let you control recording and listening functions automatically.
Three types of timers are available:

- ❑ **REC (Recording) Timer** —Unattended recording of radio broadcasts. You can set the starting time and length of the recording.
- ❑ **DAILY Timer** — Wake up to music from any source.
- ❑ **SLEEP Timer** — Fall asleep and have your CA-C220 turn off automatically after a certain length of time.

IMPORTANT!
Set your clock

Clock Setting

The timers depend on the clock: the clock must be right for the timers to work as you expect.
Note that the clock must be set, or the timers cannot be set.



Setting the Clock

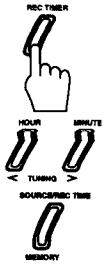
1. **Press the CLOCK ADJ. button.**
2. **Set the hour by pressing the HOUR button.**
   Each time you press the button, the hour advances by one. Hold the button down, and the hour displayed will advance continuously, until you release the button.
3. **Set the minutes by pressing the MINUTE button.**
   Each time you press the button, the minutes advance by one. Hold the button down, and the minutes advance in ten minutes increments until you release the button.
4. **Press the CLOCK ADJ. button again and the clock is set for the hour and minute you have selected, starting from zero seconds.**

CAUITON: If there is a power failure, the clock loses its setting. The display shows "AM 12:00", and the clock must be reset.

Setting the REC (Recording) Timer

With the Recording Timer you can make a tape of a radio broadcast automatically whether or not you are home. For the timer to work correctly, you need to make sure of the following in addition to setting the time for the Tuner and Cassette Deck to come on:

- ❑ You can set the Recording Timer whether the Unit is on or off.
- ❑ The tape you want to record onto must be in Deck B.
- ❑ The radio station whose program you want to tape must be the last one played before the timer comes on.



Procedure For Setting the Recording Timer

1. **Press the REC TIMER button so that "REC TIMER" blinks on the display. As long as it is blinking, you can continue with the setting process.**
   ❑ If you wait too long, and it stops before you are done, just press the REC TIMER button once and start over.
2. **Set the time you want the radio to come on, and put a tape in Deck B to record on.**
   Press the HOUR button to set the hour and the MINUTE button to set the minute.
3. **Press the SOURCE/REC TIME button to set the length of time for the recording.**
   Each time you press this button, the duration increases by one minute. If you hold the button down, it will advance in ten minute increments up to 120 minutes, which is the maximum time you can set.
   ❑ At the end of the set length of time the radio and Deck B will shut off.

4. **Press the REC TIMER button again, or wait 5 seconds.**
   The set contents are displayed for a few seconds and the "REC TIMER" indicator lights up.
   The Unit will memorize the setting. When the set time comes, the CA-C220 turns the power on and records the broadcasting station you selected last, before turning the power off.
   ❑ If a button is pressed when the Recording timer is operating, recording continues but the timer is canceled.

Before the Set Time Comes
- ❑ Check that tape direction is correct. This is important especially when Reverse Mode is off.
- ❑ Set Reverse Mode on if you want to record on both sides of the tape.
- ❑ Select the Sound Mode if you want to record with one of the Sound Mode (D. CLUB, HALL STADIUM, etc.).
- ❑ Set the VOLUME control to MIN so that no sound comes out from speakers when the recording timer switches on the CA-C220. This is important especially if you will be out during the recording.

It is very easy, and can be very disappointing, to forget to put in a tape, or to accidentally leave a tape in Deck B you don't want recorded over. Although this happens to almost everyone at one time or another, we hope it won't happen to you!

To Change the Recording Timer Setting
Press the REC TIMER button twice ("REC TIMER" reappears) and make any changes you want.
To Cancel the Recording Timer Setting
Press the REC TIMER button again so that "REC TIMER" goes off on the display.

Setting the DAILY Timer

With this timer you can wake up to music from a CD, tape or your favourite radio program.
- ❑ You can set the DAILY Timer whether the Unit is on or off.

Procedure For Setting the DAILY Timer

1. **Press the DAILY TIMER button so that "DAILY TIMER" blinks on the display.**
2. **Set the time you want the Unit to turn on:**
   ❑ Press the HOUR button to set the hour and the MINUTE button to set the minute.
3. **Press the SOURCE/REC TIME button to set the source.**
   ❑ Each time you press this button, the display shows one of the four possible sources: CD, TAPE, FM or AM. Leave the one you want lighted but select within 5 seconds.
   - If you select FM or AM as the source, the last played station is the one which comes on at the set time.
   - If the CD is the source, when the set time comes, the CA-C220 plays in the Play Mode you set before turning the power off.
4. **Press the DAILY TIMER button again, or wait 5 seconds.**
   The set contents are displayed for a few seconds and the "DAILY TIMER" indicator lights up.
   The Unit will memorize the setting.
5. **Turn the power off.**
   When the set time comes, the CA-C220 turns on , plays the source you have selected for 60 minutes, and then the Unit turns off.
   ❑ If you press any button while the DAILY Timer is being activated, the Unit will not turn off automatically after 60 minutes.

Before Turning Off the Unit
- ❑ If the source is a tape:
  - Check that the tape direction is correct. This is important especially when Reverse Mode is off.
  - Deck B has priority, so if tapes are in both decks, the tape in Deck B plays first.
  - Set Reverse Mode on if you want to play both sides of the tape.
- ❑ Select the Sound Mode if you want to listen using a Sound Mode (D. CLUB, HALL STADIUM, etc.).
- ❑ Set the volume to an appropriate level.

To change the DAILY Timer setting
Press the DAILY TIMER button twice ("DAILY TIMER" reappears) and make any changes you want.
To cancel the DAILY Timer setting
Press the DAILY TIMER button again so that "DAILY TIMER" goes off on the display.

Setting the SLEEP Timer

Use the Sleep Timer to turn the Unit off after a certain number of minutes when it is playing. By setting this timer, you can fall asleep to music and know your Unit will turn off by itself rather than play all night.

- ❑ You can only set the Sleep Timer when the Unit is on and a source is playing.

To set the SLEEP Timer, follow this procedure:

1. With the CA-C220 on and a source playing, press the SLEEP TIMER button.
When using the Remote Control, press the SLEEP button.
The "SLEEP" indicator on the display will start blinking.

2. Set the length of time you want the source to play before shutting off.

- ❑ Each time you press this button while the "SLEEP" indicator is blinking, it changes the number of minutes shown on the display in this sequence:

→ **10** → **20** → **30** → **60** → **90** → **120** → Sleep Timer off → (back to the beginning)

When the number of minutes you want shows on the display, just wait 5 seconds until the indicator stops blinking, and is lighted steadily.

The Unit is now set to turn off after the number of minutes you set.

To Change the SLEEP Timer Setting
Press the SLEEP TIMER button until the number of minutes you want appears on the display.
To Cancel the SLEEP Timer Setting
Press the SLEEP TIMER button until the "SLEEP" indicator goes off on the display.
Turning off the Unit also cancels the SLEEP Timer.

Timer Priority

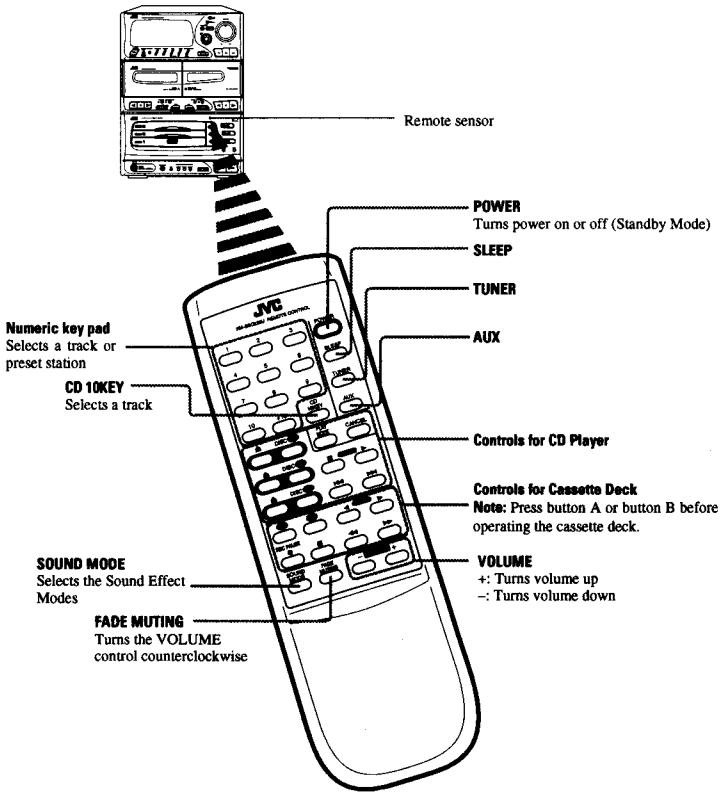
Since each timer can be set independently, you may wonder what happens if the settings overlap. Here are the priorities for each timer:

- ❑ The Recording Timer always has priority. This means that:
  - If another timer is set to come on during a time when the Recording Timer is operating, the other timer just won't come on at all, so you will always get the entire program on tape.
  - If the Recording Timer is set to come on while another timer is operating, the other timer will shut off 10 seconds before the Recording Timer is set to turn on, and the Recording Timer will then take over.
- ❑ The SLEEP Timer has priority over the DAILY Timer. This is important because if you set the SLEEP Timer to start before and then end after the DAILY Timer would start, the DAILY Timer doesn't come on. So if you want your alarm to go off as scheduled, be sure the SLEEP Timer shuts off before the DAILY Timer is set to turn on the Unit.

Using the Remote Control

The Remote Control makes it easy to use many of the functions of the CA-C220 from a distance of up to 23 feet away. You need to point the Remote Control at the remote sensor on the CA-C220's front panel.

- ❑ Most of the buttons on the Remote Control do just what the ones on the CA-C220 do.
- ❑ A few functions are available only by using the Remote Control, as described below.



Using the Numeric Key Pad

The numeric key pad is used to specify a CD track or the number you have assigned to a preset radio station. To enter a number using the numeric key pad, follow these steps:

- ❑ Before using the numeric key pad, check to see whether the numeric key pad is functioning to operate the CD Player or Tuner. This depends on which button on the Remote Control you have pressed before using the numeric key pad. For example, if you press the TUNER button before the numeric key pad, it can select a preset station. If you press the CD 10KEY button, it can select a CD track.
- ❑ For numbers between 1 and 10, just press the button with the number you want.
- ❑ For numbers from 11 to 20, first press the +10 key, then the ones digit of the number you want — to get 15, first press +10, then 5. For 20, press +10 and 10.
- ❑ For numbers from 21 to 30, press the +10 key twice; then press the ones digit — to get 25, press +10 +10 and 5. For 30, +10 +10 and 10.
- ❑ For numbers from 31 to 40, press the +10 key three times, then the ones digit of the number you want — to get 32, press +10 +10 +10 and 2. For 40, press +10 +10 +10 and 10.

Care And Maintenance — General Notes

Compact Discs

Handle your compact discs, cassette tapes, and Cassette Deck carefully, and they will last a long time.

- Remove the CD from the case by holding it at the edges while pressing the center hole lightly.
- Do not touch the shiny surface of the CD, or bend the CD.

- Put the CD back in its case after use to prevent warping.
- Be careful not to scratch the surface of the CD when placing it back in the case.
- Avoid exposure to direct sunlight, temperature extremes, and moisture.

- A dirty CD may not play correctly. If a CD does become dirty, wipe it with a soft cloth in a straight line, from center to edge.

CAUTION: Do not use any solvent (for example, conventional record cleaner, spray thinner, benzine, etc.) to clean a CD.

Moisture Condensation

Moisture may condense on the lens inside the Unit in the following cases:

- After starting the heating in the room.
- In a damp room.
- If the unit is brought directly from a cold to a warm place.

Should this occur, the Unit may malfunction. In this case, leave the unit turned on for a few hours until the moisture evaporates, unplug the AC power cord, and then plug it in again.

In general, you will have the best performance by keeping your tapes, CDs, and the mechanism clean.

- Store tapes and CDs in their cases, and keep them in cabinets or on shelves.
- Keep the Cassette Deck's tape doors and the CD trays closed when not in use.

Cassette Tapes

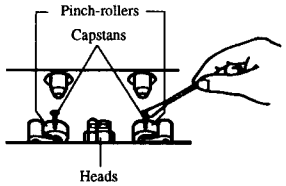
- If the tape is loose in its cassette, take up the slack by inserting a pencil in one of the reels and rotating.
- If the tape is loose, it may get stretched, cut, or caught in the cassette.

- Do not touch the tape surface.

- Do not store the tape:
  - In dusty places
  - In direct sunlight or heat
  - In moist areas
  - On a TV or speaker
  - Near a magnet

Cassette Deck

- If the heads, capstans, and pinch-rollers of the Cassette Deck become dirty, the following will occur:
  - Loss of sound quality
  - Discontinuous sound
  - Fading
  - Incomplete erasure
  - Difficulty recording
- Clean the heads, capstans, and pinch-rollers using a cotton swab moistened with alcohol.



- If the heads become magnetized, the Unit will produce noise or lose high frequencies.
- To demagnetize the heads, turn off the Unit, and use a head demagnetizer (available at electronics and record shops).

Troubleshooting

- If you are having a problem with your CA-C220, check this list for a possible solution before calling for service.
- If you cannot solve the problem from the hints given here, or the Unit has been physically damaged, call a qualified person, such as your dealer, for service.

Symptom	Possible Cause	Action
No sound is heard.	Connections are incorrect, or loose.	Check all connections and make corrections. (See pages 3 - 4.)
Unable to record.	Cassette record protect tabs are removed.	Cover holes on back edge of cassette with tape.
Poor radio reception	The antenna is disconnected. The AM Loop Antenna is too close to the Unit. The FM Wire Antenna is not properly extended and positioned.	Re-connect the antenna securely. Change the position and direction of the AM Loop Antenna. Extend FM Wire Antenna to the best reception position.
The CD skips.	The CD is dirty or scratched.	Clean or replace the CD.
Unable to operate the Remote Control.	The path between the Remote Control and the sensor on the Unit is blocked. The batteries have lost their charge.	Remove the obstruction. Replace the batteries.
The CD tray cannot be opened.	The main AC power cord is not plugged in.	Plug in the AC power plug.
The CD does not play.	The CD is upside down.	Put the CD in with the label side up.
Operations are disabled.	The built-in microprocessor has malfunctioned due to external electrical interference.	Unplug the Unit then plug it back in.
The cassette door cannot be opened.	During tape playing, the power cord was unplugged.	Plug in the power cord, press the POWER button, and then the EJECT button.